



Received: 06 May 2014  
Accepted: 15 July 2014  
Published: 09 October 2014

\*Corresponding author: Azouzi Mohamed Ali, Finance and Accounting Methods, Higher Institute of Business Administration (ISAAS), University of Sfax, B.P. 1013, 3018 Sfax, Tunisia  
E-mail: [Mohamed\\_azouzi@yahoo.fr](mailto:Mohamed_azouzi@yahoo.fr)

Reviewing editor:  
Steve Cook, Swansea University, UK

Additional article information is available at the end of the article

## RESEARCH ARTICLE

# CEO's commitment bias, ownership concentration, and innovation decision: Behavioral management of CEO's discretion

Hamza Fadhila<sup>1</sup>, Azouzi Mohamed Ali<sup>1\*</sup> and Jarboui Anis<sup>1</sup>

**Abstract:** This paper deals with approving the effect of both a governance system and individual cognitive and emotional features in the financial analysis of a firms' innovation decision. After discussing the theoretical linking between ownership concentration and the CEO's attitude and behavior, we are showing on empirical grounds the relationship between the manager's behavior toward the innovation decision and his cognitive commitment level. The CEO's commitment bias and attitude conception were measured using a questionnaire. The data analysis was performed using the Bayesian network method on 220 Tunisian managers. In particular, we found that the application of a persuasion mechanism does not have a real impact on the alignment of the manager's attitude and behavior in key tasks, such as the innovation decision. The CEO's real behavior was more related to an important individual involvement in this behavior rather than to persuasive effort committed by block holders to make him contract this action. Attitude and behavior toward innovation appeared to be associated with psychological commitment "manager-task" which suggests that the disciplinary governance system plays no role in the process of a CEO's discretion management. We argue that the persuasion approach is not an interesting path in behavior alignment; yet, it should be reinforced with the commitment approach for understanding manager choices.

### ABOUT THE AUTHORS



Azouzi Mohamed Ali is an assistant professor in finance and accounting methods faculty of management Mahdia-Tunisia and an associate editor in emotional finance "Journal of Behavioral Economics Finance, Entrepreneurship, Accounting and Transport." He is expert in corporate finance, behavioral finance business, corporate governance, corporate financial policy, financial structure, investment decisions, and emotional intelligence. He is member of the editorial board of "African Journal of Business Management (AJBM)" and "International Research Journal of Management and Business Studies."

### PUBLIC INTEREST STATEMENT

The goal of our research (I am co framer of the doctoral thesis of Fadhila HAMZA) is to introduce the concept of engagement as an explanatory factor of agency problems.

This study was the subject of an article: Governance mechanisms, managerial commitment bias, and firm's investment decision escalation: Failure of firm's crises communication: Bayesian network method. *A.J.E.R.* 4 (2), 125-149, 2014.

The second problem tends to explore the role of the governance system in promoting innovation via their effect on the determinants of managerial discretion. This study was the subject of three articles: The first published: CEO's Commitment Bias and its Firm R&D Level Bayesian Network Method: Evidence form Tunisia. *G.J.M.B.R.* 13 (11), 31-44, 2013.

The second is accepted in your journal: "CEO's commitment bias, ownership concentration and innovation decision: behavioral management of CEO's discretion".

**Keywords:** commitment bias, ownership concentration, investment decision, behavioral management, Bayesian network methods

**JEL classifications:** G14, G31, G32, D80

## 1. Introduction

For long time, ownership concentration has been considered by the corporate governance literature as a central mechanism for solving the agency problem (Shleifer & Vishny, 1997).

Shareholders' protection mechanisms aim to enable shareholders to obtain justification of manager's actions. Such views are consistent with what studies have found, in that inefficient shareholders protection systems make it possible for managers to behave opportunistically.

Ownership concentration is a disciplinary variable. It refers to the percentage of shares owned by the major shareholders. Ownership concentration is primordial to facilitate the control of executives, to minimize the monitoring costs, and thus to contribute to resolving the agency problem. In this fact, researchers such as Shleifer and Vishny (1986), Agrawal and Mandelker (1990), Bethel and Liebeskind (1993), Agrawal and Knoeber (1996), and Denis, Denis, and Sarin (1997) suggest that ownership concentration is a gage of the manager's control effectiveness, and so, it is a guarantee for best governance.

Currently, the literature studying the effect of ownership concentration on the investment in R&D defends the finding that block holders perceive innovation as a means to expand their business. Wahal and Mcconnell (2000) and Hosono, Tomiyama, and Miyagawa (2004) found that an important part of the capital held by dominant shareholders is positively correlated with investment in R&D. Hill and Snell (1988) also confirm the existence of a positive and significant relationship between the level of R&D and the concentration of ownership. These results clearly show that block holders, given their large share in the capital, are encouraged to carefully control the decisions of managers in order to promote the long-term performance of the firm (Alchian & Demsetz, 1972).

Dominant shareholders who hold a significant part of the capital have an interest to invest in the management control of the firm and to limit the risk of the CEO's discretionary behavior, in order to gain a large return (Alexandre & Paquerot, 2000).

However, managerial latitude of action is, in terms of the UET theory (Carpenter, Geletkanycz, & Sanders, 2004; Hambrick & Finkelstein, 1987), determined by three categories of constructs: environmental determinants, organizational determinants, and personals and cognitive CEO's characteristics.

Hambrick and Finkelstein (1987) propose to introduce the notion of managerial discretion (latitude of action) as a "moderator" variable within the initial model of Hambrick and Mason (1984) to improve the explanatory power of their approach and to identify that the effect of a CEO's personal characteristics depends on the managerial latitude they have.

In other words, if the executive has no latitude, strategy and performance should be insensitive to their personal characteristics. Thus, for Hambrick and Mason (1984), managerial latitude exists when there is an absence of constraints and when there are many alternatives for achieving the CEO's objectives.

Although, if managerial discretion has only a moderating role in UET, when introduced into the relationship between a CEO's characteristics and nature of the strategy to better explain the strategic choices, its status appears at first view more central in the theory of governance. Thus, Charreaux (1996, 1997, 2008), following the logic of prior analyzes of Alchian and Demsetz (1972) and Jensen and Meckling (1976), defines corporate governance as "the set of mechanisms that define the powers and influence the decisions of the chief executive according to the mechanisms that govern

his conduct and define managerial discretion” (Wirtz, 2011). In other words, governance systems in the view of the founders of disciplinary governance set the “rules of the managerial game” and thereby define managerial discretion.

The approximation of managerial latitude in the corporate governance theory differs from that which underlies UET. In the UET, discretion was suggested as a moderating variable in the relationship between a CEO’s characteristics and performance in strategic choices. If the latitude is low, the CEO’s characteristics are supposed to have no role. Otherwise, in the governance theory, the latitude is the central determinant which links the governance system, the executive, and the performance.

This literature approaches the direct influence of the disciplinary mechanism on the manager’s investment behavior. However, by referring to theories of behavior changing [the theory of persuasion (Eagly & Chaiken, 2005; Girandola, Michelik, & Joule, 2008), the theory of commitment (Girandola, 2005; Joule & Beauvois, 1998; Kiesler, 1971), the theory of reasoned action (Fishbein & Ajzen, 1975), and theory of planned behavior (Ajzen, 1987)], the existence of a cause–effect relationship between persuasion (discipline/incitation) and behavioral change is profusely challenged. According to these theories, persuasion may lead, consistently, to an attitude change, rarely, to a behavioral intention, but, not necessarily, to authentic behavior.

Persuasion has a major role in the attitude conception toward the authentic behavior. Its role is essentially at the cognitive, emotional, social, and moral level (Girandola, 2003; Girandola et al., 2008; Petty & Krosnick, 1995). To obtain the authentic behavior, studies in the paradigm of “free will compliance” advance techniques of influence that may drive someone to freely change their behavior. In this paradigm, behavior changing comes after the implementation of preparatory acts and acts of commitment. Much research has been done in this setting: the main ones are Michelik and Girandola (2007), Deschamps, Joule, and Gummy (2005), and Girandola and Roussiau (2003).

Consistent to this paradigm, our interest here is to mediate a CEO’s cognitive characteristics (attitude) in the relationship between the ownership concentration (persuasion) and decisional latitude on investment (authentic behavior). However, in our study, we are interested in reconsidering the role of ownership concentration in the alignment of managerial behavior in the investment decision in R&D through their impact on the CEO’s cognitive characteristics (optimism, myopia, loss aversion, expertise power, and overconfidence). This impact of ownership concentration on the CEO’s mental patterns and consequently on their behavior is conditioned by the existence or not of the cognitive commitment.

This article is structured as follows: Section 2 presents the related literature and the theories which motivate the empirical work; Section 3 discusses the empirical strategies that were adopted; and Section 4 presents the main results and discussion.

## 2. Literature review

### 2.1. Ownership concentration, CEO’s commitment bias, CEO’s optimism, and innovation decision

The conceptualization of optimism as illustrated through optimism theory has its property in the expectancy-value model of motivation (Scheier & Carver, 1989). It recommends that individual behavior is affected by the pursuit of principal goals and the level of desire of accomplishment toward these goals.

Optimism may be as significant as the wish to have an excellent result or where an individual feels they are performing well at the key task. Therefore, Scheier and Carver (1991, 2002) suggest different measures of expectancy. They show that when individuals has never been experienced a particular task or when the task is uncertain and varying over time “generalized expectations may be particularly useful in predicting behavior and emotional reactions” (Scheier & Carver, 2002).

However, Scheier and Carver (2002) show that performance on many various tasks increases with the level of a person's optimism. At a definite point, an additional increase in optimism no longer leads to an increase in performance. On the contrary, a decrease in person's performance may be observed.

Commonly, optimists tend to be people who have a high confidence in their aptitude to choose the right tasks and to realize these tasks through determined work (O'Connor & Cassidy, 2007). Thus, in difficult moments, optimists feel that they can profit from these situations and handle them successfully. This confidence in self-ability and the perceived facility of tasks "locus of control" has a direct effect on behavioral intention (Hambrick, 2007).

Heaton (2002) defines the optimistic manager as a manager who systematically overestimates high firm performance and underestimates poor firm performance. While innovation decision is risky and affects only the long-term performance of firm (Lavery, 1996; Sangster, 1993), managers seemed to be less optimistic than shareholders, thanks to many considerations such as short-term share value, reputation, and so on. As managers suffer from a cognitive bias which can stop innovation, the role of shareholders (who are less biased than the manager), in this case, is to discipline the manager in order to behave optimistically.

The presence of block holders is long advanced as a disciplinary governance mechanism which is associated with a high level of control over the executive. Studies that defend this hypothesis (Alexandre & Paquerot, 2000; Denis et al., 1997) argue that the strict control and discipline exerted by block holders participate in the alignment of the manager's behavior and limit his discretion attitude given their role to arouse in him a sense of menace and fear of losing his job, and thus his reputation on the market.

Therefore, this evidence confirms proportionally some results derived from social psychological research also shown by the theory of persuasion (Girandola et al., 2008), which affirms that menace and discipline can generate attitude change and belief normalization by raising the level of consciousness and the sense of fear (Girandola et al., 2008; Witte, 1998). However, it contradicts the main theory of persuasion's evidence due to the fact that changing attitudes and beliefs does not mean changing behaviors (Girandola, 2005; Joule, Girandola, & Bernard, 2007). So, firstly, we hypothesize as follows:

**H1:** The presence of block holders increases generally the CEO's optimism attitude.

Similar to the theory of commitment, (Girandola, 2005; Girandola et al., 2008; Joule et al., 2007), which demonstrates that the relationship between attitude and behavior is established by means of commitment bias (Deschamps et al., 2005), Weinstein (1980) verifies that individuals have a tendency to be more optimistic about projects in which they judge they have power. Moreover, individuals tend to be more optimistic about tasks they are highly committed to.

Both stipulations are typical for the job as an executive, who decides R&D investment on the path and the potential course of the firm and is consequently responsible for its projects.

Based on this affirmation, we hypothesize that if the manager is cognitively and psychologically committed to a innovation investment decision, the pressure of block holders on the CEO's optimistic attitude affects consequently his behavior. On the other hand, with the absence of a commitment link between the manager and innovation decision, shareholders' effort has no influence on the CEO's optimistic investment behavior. We hypothesize further the following:

**H1':** With the presence of commitment bias the impact of ownership concentration on CEO's optimism leads to an effective behavior in favor of R&D investment.

## **2.2. Ownership concentration, CEO's commitment bias, CEO's myopia, and innovation decision**

The essence of the question of myopia in the investment decision is the agency problems that widen the gap between the shareholders' and managers' interests. Conflicting interests in terms of the time horizon between these two partners has already been widely discussed by the financial literature. According to Narayanan (1985, 1996), managers are encouraged to invest in the short term to quickly reveal the performance of their investments. Investments in R&D, in view of the time horizon, have been the subject of numerous studies. As these investments engage firms in the long term, managers may have the tendency to reduce innovation, considerably, to the detriment of the shareholders' interests (Lavery, 1996; Sangster, 1993).

Hansen and Hill (1991) argue that firms with concentrated ownership adopt long-term investment. Indeed, in such firms, shareholders have more power and they can use their voting rights and oppose attempts at takeovers due to a decrease in the share price. This confirms that block holders are less affected by changes in short-term results. They are oriented to invest in long-term projects that maximize their long-term wealth.

In contrast, in firms with dispersed ownership, a significant decrease in short-term results can lead minority shareholders to sell their shares. This sale improves the probability of a takeover and consequently is a threat to the CEO's job security. Rationally, managers will oppose a takeover by promoting short-term investments, which release immediate cash flow and ignore investment in long-term projects to reduce the decline in stock price and the probability of a takeover.

On the other hand, Yafeh and Yosha (2003) confirm that ownership concentration is negatively associated with the R&D level. Also, the result generated by Czarnitzki and Kraft (2003) shows that ownership is more dispersed on companies that engaged in innovative activities. Francis and Smith (1995) found no significant differences in the R&D level between firms with a dispersed ownership structure and those with a concentrated ownership structure.

According to the theory of persuasion (Girandola et al., 2008), threat and discipline can produce attitude change by raising the level of activation and the sentiment of fear (Girandola et al., 2008; Witte, 1998). So, the managerial attitude toward decision horizons is conditioned by the importance of the part of capital held by block holders. Managers' attitudes become more (less) "myopic", in the sense that they tend to less (more), considering the weight of cash flows occurring after their employment time horizon, when the ownership is dispersed (concentrated). So, firstly, we hypothesize as follows:

**H2:** The presence of block holders decreases generally the CEO's myopia.

Referring to the theory of commitment (Girandola, 2005; Joule et al., 2007) the use of discipline in the behavior change process can produce attitude change but cannot effectively stimulate new behaviors especially in situations where the discussed issues do not require high involvement from the part of subjects. Deschamps et al. (2005) proposes to reconsider the commonly accepted, idea that individual attitude would be perceived as a motivation of his behavior. However, they prove that attitude should be supported by the main determinants of the action: "the preparatory act" which refers to the commitment of the subject to the task.

Relating to the lack of correlation between attitudes and behaviors and the polemic role of the discipline (ownership concentration) and the commitment bias (manager involvement) in the attitude change (myopia) and the behavior choice alignment (R&D investment decision), we hypothesize further the following:

**H2':** With the presence of commitment bias the impact of ownership concentration on CEO's myopia leads to an effective behavior in favor of R&D investment.

### **2.3. Ownership concentration, CEO's commitment bias, CEO's loss aversion, and innovation decision**

Faced with risk, managers and shareholders have different attitudes. Leaders have a major part of their wealth and their human capital invested in the firm. Therefore, they are significantly more involved in the fluctuation of results than shareholders who can more easily diversify their portfolios (Jarboui & Olivero, 2008).

Morck and Yeung (2003) found that ownership concentration was associated with lower levels of diversification in firm activities. In addition, they found a significant positive relationship between the level of R&D and ownership concentration. Hill and Snell (1988) consider that strategy-oriented R&D is proportionally less intense in firms where shareholders have low power. Shareholders, unlike leaders, prefer the strategy of diversification of their portfolios in order to reduce risk. They prefer a high degree of profitability/risk. On the contrary, managers cannot diversify their investment in human capital. They tend to diversify the activities of the firm. According to these authors, the choice between these two strategies depends on the respective powers of shareholders and managers. Since the ownership concentration gives shareholders a strong and real power, firms with concentrated ownership invest more in risky projects. Accordingly, Hoskisson, Hitt, and Hill (1991) conclude that a dispersed ownership structure implies low control on the part of shareholders, which enable leaders to implement diversification strategies in order to reduce risk and invest in areas that promote their personal strategies.

Denis et al. (1997) have shown the existence of a negative relationship between diversification strategy and the presence of a block of control formed by shareholders. This means that diversification strategy is more frequent in companies where capital is highly diluted. Anderson, Bates, Bizjak, and Lemmon (2000) and Collin and Bengtsson (2000) have concluded the same affirmation. A dispersed ownership promotes and disseminates the adoption of a diversification strategy.

Because of their loss aversion, managers protect themselves from the risk of loss of their reputation. They choose to invest less in innovative projects and more in traditional projects with more rapid and more certain returns. As a result of all these circumstances and in order to reduce the CEO's loss aversion, block holders can discipline managers, monitoring them to decide innovation optimally and protecting them from the reputational costs in the case of failure innovations (Aghion, van Reenen, & Zingales, 2009).

However, Manso (2011) shows that larger pressure, discipline and threat on innovators, and lower tolerance toward errors can stiffen innovation. Similar to the evidence provided by the theory of persuasion, the higher the level of discipline is, the lower the effectiveness of behavior results is (Girandola et al., 2008).

Therefore, a number of researchers on the persuasion paradigm (Paulhan, 1992; Steptoe, 1991) show that faced with a high level of threat and discipline, individuals do not have, habitually, a passive reaction. They might build an active strategy of "coping" in order to neutralize and alleviate the cognitive destabilization produced by the sentiment of fear and stress. Many mechanisms of "coping" can be used in this case, such as: (1) denial mechanism (Fernbach, Hagmayer, & Sloman, 2014; Lazarus & Folkman, 1984), (2) the comparative optimism (Courbet, 2003; Milhabet, Verliac, & Desrichard, 2002; Weinstein, 1980), and (3) the behavioral intention (Paulhan & Bourgeois, 1998).

If we apply this reasoning in firms with concentrated ownership, greater shareholders' risk tolerance might reduce the CEO's loss aversion attitude, but the pressure exerted by block holders has no positive effect on the managers' risk investment behavior. Thus, managers can distort a firm's investment because of their risk aversion. So, initially, we hypothesize as follows:

**H3:** The presence of block holders reduces generally the CEO's loss aversion attitude.

Relating to the announcement of the theory of commitment, (Girandola, 2005; Girandola et al., 2008; Joule et al., 2007), the link between attitude and behavior is activated by means of commitment bias (Deschamps et al., 2005). Based on this affirmation, we hypothesize that if the relationship between the manager and risk investment decision is qualified by a high level of cognitive and psychological commitment, the pressure of major shareholders on the CEO's loss aversion attitude consequently affects his behavior. On the other hand, with the absence of a commitment link between the manager and risk investment decision, their effort has no influence on the CEO's risk investment behavior.

**H3':** With the presence of commitment bias the impact of ownership concentration on the CEO's loss aversion leads to an effective behavior in favor of R&D investment.

#### **2.4. Ownership concentration, CEO's commitment bias, CEO's expertise power, and innovation decision**

Basically, the upper echelons theory (Hambrick & Mason, 1984) suggests that it is the CEO's experiences and tenure which drive managers to either decide or not on organizational change. Thus, a number of studies have verified that a CEO's experience may affect the manager's attitude toward innovation (Musteen, Barker, & Baeten, 2006).

As Chen and Zheng (2012), we adopt that, generally, three interpretations of expertise power might be employed: human capital investment, tenure, and experiences. Thus, the authors investigated that high CEO's expertise power with the accumulation of tenure leads to increases in the manager's incentive of risk-taking and, so, increasing the firms' innovation.

On the contrary, a number of studies have examined the relationship between the manager's expertise power and innovation and/or inertia. These studies found that longer executive tenure (Musteen et al., 2006), longer industry experiences (Geletkanycz & Black, 2001), and cultural values (Geletkanycz, 1997) lead to inertia in the manager's actions.

Hambrick and Fukutomi (1991) suggested that important expertise power might lead to inertia in a firm's strategies because long-tenured CEOs have declining interest in their jobs, and, dissimilarly, have increased authority to avoid calls for change. Thus, CEOs with high expertise power would, unsurprisingly, have more conservative attitudes toward innovations.

Reliable with topical theoretical studies on managers' expertise power and risk-taking Chen and Zheng (2012) displayed a more differential influence of CEO experiences on risk-taking, conditional on the importance of information asymmetry concerning CEO skills. The authors show that there is a positive and significant relationship between tenure and risk-taking, only when the manager holds private information about their own ability, accordingly, under agency problem.

Ownership concentration might define the relationship between shareholders' competences and skills and those of their CEOs. Lee (2005), Lacetera (2001), and Chouaibi and Affes (2010) show that block holders, as an industry, invest their specific competences in innovation activities and generate organizational learning by diffusing their knowledge and cognitive skills associated with these projects to deciders.

The authors investigated that block holders' control derives the mental pattern of the decision-maker in order to make him more competent and encourage him to decide on innovation. The intensity of control is the result of the dual role that plays block holders as the principal financial resources investors and the principal cognitive resources investors.

According to the theory of persuasive communication (Chappé, Verhiac, & Meyer, 2007; Girandola et al., 2008), not only control and "menace" might induce change in an individual's attitude. Yet, we

can persuade with argumentation and/or with learning as an interdisciplinary exchange in order to obtain the subjects consent and insertion in our goals and our interests and strategy (Maillat & Oswald, 2013).

As a result, block holders and executives are being considered as work teams, while subjects' power and performance in intra-team interactions can be entrenched in diverse sources such as expertise, information, and position in the formal organizational hierarchy (Greer, Caruso, & Jehn, 2011).

Therefore, a CEO's expertise power in R&D investment is conditioned by the shareholders' experiences. So, managers' attitudes toward their expertise power become more optimistic. In this fact, they choose innovation decisions when capital is concentrated. So, firstly, we hypothesize as follows:

**H4:** The presence of block holders influences greatly the CEO's expertise power attitude.

However, numerous psycho-sociological studies (Fernbach et al., 2014; Joule et al., 2007) demonstrate that the persuasive approach cannot, certainly, determinate the individual behavior. Normally, individual behavior is chosen freely and not under environmental pressures, external motivation, or bodily states.

Therefore, the individual's final behavior does not normally conform to its attitude toward behavior. As advanced by Deschamps et al. (2005), it is conformed only when a person attains a high level of commitment bias. Similarly, Michelik and Girandola (2007) and Girandola et al. (2008) show that a person expresses a more favorable intention to be engaged in a course of action after completing a preparatory act (commitment).

Consequently, we hypothesize that if the relationship between the manager and innovation decision is qualified by a high level of cognitive and psychological commitment, the role of shareholders expertise on the CEO's expertise power generally affects his behavior. On the other hand, with the absence of a commitment link between the manager and innovation decision, it has no influence on the CEO's innovation behavior. So, we hypothesize further the following:

**H4':** With the presence of commitment bias the influence of the ownership concentration on the CEO's expertise power leads to an effective behavior in favor of R&D investment.

### **2.5. Ownership concentration, CEO's commitment bias, CEO's overconfidence, and innovation decision**

Overconfidence is a source of many positive decisions for a company. An overconfident manager can be a great asset to a firm's performance, especially in innovation tasks. Therefore, an overconfident executive is shown as a successful manager when discounting firm inertia and promoting innovative actions. However, shareholders should know how to manage this emotional bias because it is very contagious and can improve shareholders' interest and enhance innovation.

Kennedy, Anderson, and Moore (2013) show that in many contexts, essentially in companies' background, individuals can determine each other's real levels of ability and performance, and, consequently, learn when others are overconfident. So, the issue is how the interaction of shareholders' overconfidence with CEO's overconfidence may influence the firms' investment decisions.

Given the significance of communal efficacy for group performance in specific tasks, numerous studies (Bandura, 1997; Lester, Meglino, & Korsgaard, 2002; Tasa, Taggar, & Seijts, 2007) have noted the importance of overconfidence and the associated construction of group effectiveness in these tasks such as: (1) at the individual level, performance and overconfidence may be derived from explicit experience or enactive mastery experience; (2) at the group level, studies have focused

wholly on the role of persuasive communication and the enactive mastery experience in which overconfidence arises continuously on specific tasks especially when groups receive feedback about their performance (Gibson & Earley, 2007; Tasa et al., 2007).

Thus, as advanced by the theory of persuasive communication (Chappé et al., 2007; Girandola et al., 2008), pressure and discipline might induce changing a person's beliefs. However, Paulhus (1998) poses the question, what happens to someone if people intervened to manage their overconfidence? To explain the bewildering role of persuasion on improving overconfidence, Anderson, Brion, Moore, and Kennedy (2012) noted that attaining higher levels of confidence helps a person achieve higher performance. Performance is status, prominence, and hierarchical position accorded to a person by their working groups. Higher individual intragroup performance is the result of a group's persuasion exerted by control over group decisions and access to the group's resources. Consequently, the need for high performance is a basic and powerful motivation and persuasion (Tay & Diener, 2011).

Therefore, block holders and executives are being considered as work teams, while block holders are naturally more confident in their performance on R&D investment related to their expertise, information, and position in the formal organizational hierarchy (Greer et al., 2011). In this fact, CEO's overconfidence is conditioned by the shareholders' confidence level. Their objective is to persuade and influence an executive's overconfidence with regards to innovation actions. So, firstly, we hypothesize as follows:

**H5:** The presence of block holders influences greatly the CEO's overconfidence.

However, in recent studies, psychological commitment has gained escalating interest in various fields especially executives' work and job engagement (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2008; Bakker, Shimazu, Demerouti, Shimada, & Kawakami, 2011; Gallup, 2010; Griffin et al., 2008). As defined by Schaufeli, Salanova, González-romá, and Bakker (2002) psychological commitment in specific tasks is "a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption" (p. 74). Similarly, psychological commitment designates the degree to which executives employ all their cognitive skills in performing specific actions. It refers to how a person expresses himself in specific tasks by investing his physical, affecting, and cognitive competences simultaneously (Rich, Lepine, & Crawford, 2010; Schaufeli & Bakker, 2003; Schaufeli, Bakker, & Van Rhenen, 2010). Consequently, psychological commitment reflects a person's investment of his mental and emotional skills in specific actions in order to fulfil needs for self-sufficiency, ability, and proficiency. Thus, psychological commitment induces an individual's overconfidence toward challenged action because of his positive appraisal of the task involvement. Commitment to key action represents the degree to which an individual considers this action as a vital task of his life in which he should invest all his cognitive competences (Gagne' & Deci, 2005; Ryan & Deci, 2000).

Accordingly, we hypothesize that if the relationship between executives and innovation decision is qualified by a high level of cognitive and psychological commitment, the effect of block holder's overconfidence on the CEO's overconfidence level generally influence his behavior. On the contrary, with the absence of a commitment link between the manager and innovation decision, it has no influence on the CEO's innovation behavior. So, we hypothesize further the following:

**H5':** With the presence of commitment bias the influence of the ownership concentration on CEO's overconfidence leads to an effective behavior in favor of R&D investment.

### 3. Methodology

#### 3.1. Data sample selection

Our empirical study is based on quantitative research. We use a questionnaire as a method of data collection. Our questionnaire consists of four main parts, based on treated areas in theory:

**Table 1. Visited companies**

	Total	Number
Initial BVMT sample		50
Financial firms		(22)
	28	
Other non-financial firms		270
	298	
Insufficient data to emotional biases		78
Final sample	220	

**Table 2. Profile of subjects**

	Total	Percentage
<i>Firm's activity</i>		
Agriculture and crafts	16	7
Industry	128	58
Commerce and service	76	35
<i>CEO's tenure</i>		
<5 years	33	15
5-10 years	125	57
>10 years	62	28
<i>CEO's age</i>		
<46	146	66
≥46	74	34
<i>Total</i>	220	100

- The first part aims to collect some company information from the firm's statute and financial annual statement: CEO's incentives, total assets, R&D expense, etc.
- The second part focuses on determination of the level of the CEO's commitment bias.
- The third part focuses on determination of the CEO's emotional bias.
- Part four aims to know the level of CEO's executive power.

The questionnaire is addressed to managers in 220 non-financial Tunisian companies during the revolution period (2010–2011 fiscal year), 29 are listed companies and 191 are non-listed companies chosen from the list of firms implanted in the region of Tunis and Sfax provided by the “Agency of promotion of industry” in these region (Table 1). All financial firms were eliminated due to the fact that this sector is regulated and has particular governance systems and characteristics. Firms with insufficient data regarding the CEO's emotional bias are also excluded.

The selected sample corresponds to firm managers or CEO's representing ranging in age from 30 to 70 (Table 2). In some firms, questionnaires have been distributed by the method of door-to-door to be delivered to the concerned person; a few of them have been mailed and most of them have been contacted via two accounting firms with which we have a great relationship.

### 3.2. Variables' measurement

On this context, we aim to determine the endogens and exogenesis variables' measurement.

### 3.2.1. Managerial latitude: innovation decision

We use the research and development (R&D) intensity as a proxy for firm specific assets.

As Francis and Smith (1995), Cho (1998), Abdullah, Weiyu, and Vivek (2002), Azouzi and Jarboui (2012), and Hamza and Jarboui (2012), we evaluate innovation decisions by the ratio of a firm's R&D expense divided by total assets.

The R&D intensity takes the following two points:

- 1 if this ratio >50%.
- 0 if not.

### 3.2.2. Ownership concentration

In our study, we will adopt the measure chosen by Shabou (2000) adapted to Tunisian context. This variable is dichotomous; it is set to 1 (value 0) when the percentage held by the block holder is greater (less) than 50%. The companies where the shareholders hold at least 50% of the capital were qualified as heavily concentrated.

### 3.2.3. CEO's commitment bias

To measure the CEO's commitment bias, we take the same steps as most of studies have using an adaptation of the original questionnaire elaborated by Meyer and Allen (1991) to evaluate organizational commitment (Organizational Commitment Scale). This instrument is chosen because of its validity and its multidimensional character shown by several researchers (Hamza, Azouzi, & Jarboui, 2013; Hamza & Jarboui, 2012; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). The commitment bias takes the following two points (Table 3):

- 2 if the manager has a high level of this bias.
- 1 if not.

### 3.2.4. CEO's emotional bias

To determinate the CEO's four emotional biases (optimism, loss aversion, myopia, and overconfidence), the questions have been inspired from the questionnaires formulated by the Fern Hill and Industrial Alliance companies (Azouzi & Jarboui, 2012).

The emotional bias takes the following two points (Table 4):

- 2 if the manager has a high level of each bias.
- 1 if not.

### 3.2.5. CEO's executive power

To determinate the CEO's executive power, we elaborate questionnaire with nine items in order to calculate a score that indicates the level of the CEO's expertise power (Hamza et al., 2013).

**Table 3. Items used in the CEO's commitment bias scale (five items)**

Items	Factor 1: CEO's commitment bias 62.236% of total variance
1. Consider your investment decision as you	.861
2. What is your experience in terms of investment?	.841
3. Your investment decision is	.786
4. Consider your investment decision as you	.743
5. Decided to undertake voluntary action in my project and I have not made my decision under any external pressure or submission	.712

**Table 4. Items used in the emotional biases scale (14 items)**

Items	Factor 1: loss aversion 50.710% of total variance	Factor 2: optimism 29.450% of total variance	Factor 3: overconfidence 10.275% of total variance	Factor 4: cognitive flexibility 5.385% of total variance
1. What is your propensity to take financial risks with respect to others?	.802			
2. With a great financial decision, what do you care about more: possible losses or possible gains?	.742			
3. Insurance can protect us against a wide variety of risks: theft, fire, accidents, illness, and death ... How many insurance subscriptions have you subscribed to?	.713			
4. When you think of the word "risk" in a financial context, what term in the following list first comes to mind?	.686			
5. When I'm faced with a challenge, I give up because I'm afraid of failure	.600			
6. What emotional effect do important decisions have on you once they are taken?		.857		
7. I am motivated by imagining the successful decisions positive results of entrepreneurial tasks		.851		
8. Do you consider that degree of uncertainty is the business environment is		.842		
9. I know how to most control my emotions			.774	
10. For how long do you reckon to keep your position in your firm?			.715	
11. How confident are you in your ability to take good financial decisions?			.641	
12. How easily do you adapt yourself to deterioration of your financial situation?				.862
13. Your reaction regarding changes in your firm environment is				.862
14. In a job search would you rather seek				.789

**Table 5. Items used in the CEO's executive power scale (eight items)**

Items	Factor 1: CEO's executive power 56.665% of total variance
1. I feel that our competitors cannot easily imitate us	.702
2. The job I do require a lot of experience	.682
3. My ideas have improved the performance of the company	.672
4. Good practices are regularly identified and implemented	.646
5. It is difficult to change the habits of work colleagues	.622
6. Some changes would improve the performance of the company	.584
7. I am regularly consulted when	.512
8. Changes which are proposed generally going in the right direction	.472

Based on this ratio, the CEO's expertise power is as follows (Table 5):

- 1 if it is high.
- 0 if it is low.

### 3.3. Methods

The objective of this part is to test the diverse correlations between the innovation investment decision and the above variables. The employed methodology is a probabilistic graphical model called a Bayesian network. This methodology is inserted in the artificial intelligence explanatory method. Bayesian network is used in this paper to quantitatively explain the effect of commitment bias on the CEO's behavior in innovation investment decisions.

The basic definition of a Bayesian network is given by Pearl (1986) who declared that a Bayesian network is an explicit probability graph, which joins the estimated variables with arcs. This type of association articulates the conditional relationship between the variables. The formal description of the Bayesian network is expressed as the set of  $\{D, S, P\}$ , where:

- $D$  is a designation of variables or "nodes": in our case, it refers to firm's innovation decision, CEO's commitment level, CEO's optimism, CEO's myopia, CEO's loss aversion, CEO's overconfidence, CEO's expertise power, and firm ownership concentration.
- $S$  is a designation of "conditional probability distributions" (CPD).  $S = \{p(D)/\text{Parents}(D)/D \in D\}$ ,  $\text{Parents}(D) \subset D$  means that for all the parent nodes for  $D$ ,  $p(D)/\text{Parents}(D)$  is the conditional distribution of variable  $D$ . Firm's innovation decision.
- $P$  is designed as the "marginal probability distributions".  $P = \{p(D)/D \in D\}$  refers to the probability distribution of variable  $D$ .

In the Bayesian network method, the problematic may be modeled with the actions of all variables. In general, three levels in modeling process are applied: initially, we approximate the probability distribution of each variable and the conditional probability distribution between them. Secondly, base on these estimations, we can acquire the combined distributions of these variables. Finally, we can exercise some deductions for some variables in the objective to use some other important variables.

#### 3.3.1. Model construction and parameterization

The idea of this paper is to make precise the importance of the CEO's commitment bias as a first-order feature of firm's innovation decision. Also, we aim to prove that the presence of a solid ownership concentration (persuasive communication) has a great effect on the manager's innovation attitude but not on the manager's innovation behavior. The relationship between ownership concentration, the CEO's innovation attitude (optimism, myopia, loss aversion, expertise power and overconfidence), and the CEO's innovation behavior may be activated only with the existence of commitment bias. Thus, it has been theoretically shown that the firm innovation decision depends on:

- Ownership concentration
- CEO's commitment bias
- CEO's optimism
- CEO's myopia
- CEO's loss aversion
- CEO's executive power
- CEO's overconfidence

**Table 6. The network variables' definition and mesures**

Variables	Type
Innovation decision	Discret: yes/no
Ownership concentration	Discret: yes/no
Commitment bias	Discret: yes/no
CEO's optimism	Discret: yes/no
CEO's myopia	Discret: yes/no
CEO's loss aversion	Discret: yes/no
CEO's executive power	Discret: weak/moderate/strong
CEO's overconfidence	Discret: yes/no

**3.3.2. Definition of network variables and values**

The initial step in constructing a Bayesian network model is to list all variables, respectively, classified from the target variable to the causes. The variables definition is presented in Table 6 below:

**4. Results analysis and discussion**

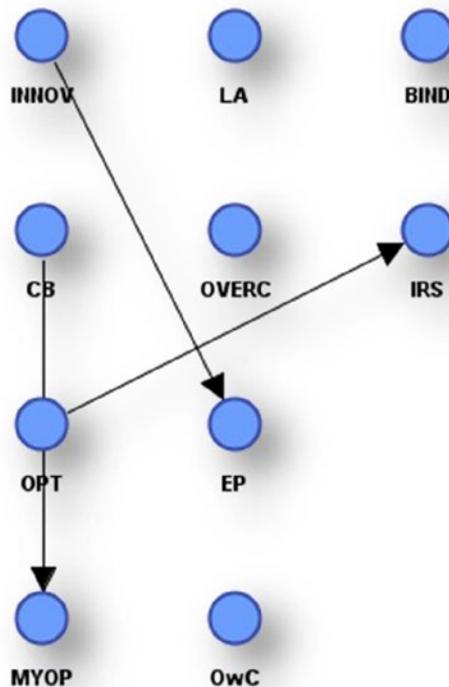
**4.1. Modelization**

The second step in constructing a Bayesian network model is to test the relationships between variables. The Bayesian network constructed using the BayesiaLab program is the result of the total variables database. The graphical relationship established between variables attaching to the data that we have obtained through the questionnaire is shown in this figure.

**4.1.1. Unsupervised learning present in the data**

BayesiaLab proposes three algorithms for discovering associations (Figure 1):

**Figure 1. INNOV: SopIEQ method.**



- SopLEQ: Research based on an overall characterization data and on the use of equivalence properties of Bayesian networks (fast and commonly used).
- Taboo: Implementing structural learning research Taboo.
- Order Taboo: Taboo learning using the search to find the optimal order of the nodes (more complete search and therefore longer).

#### 4.1.2. Unsupervised learning to discover new concepts (segmentation)

Besides, the discovery of all these associations within data has BayesiaLab clustering algorithms. The purpose of these algorithms is the discovery of natural partitions in the examples described database partitions share a set of common properties. Learning Menu provides access to the wizard clustering (Figure 2).

Two methods are available to the user:

- Number of classes set the number of classes (partitions) is requested.
- Automatic selection of the number of classes: automatic search for the number of classes for the best partitioning. This research, which is carried out through a random walk guided, requires specifying the number of initial scores and the number of partitions that the algorithm does not exceed.

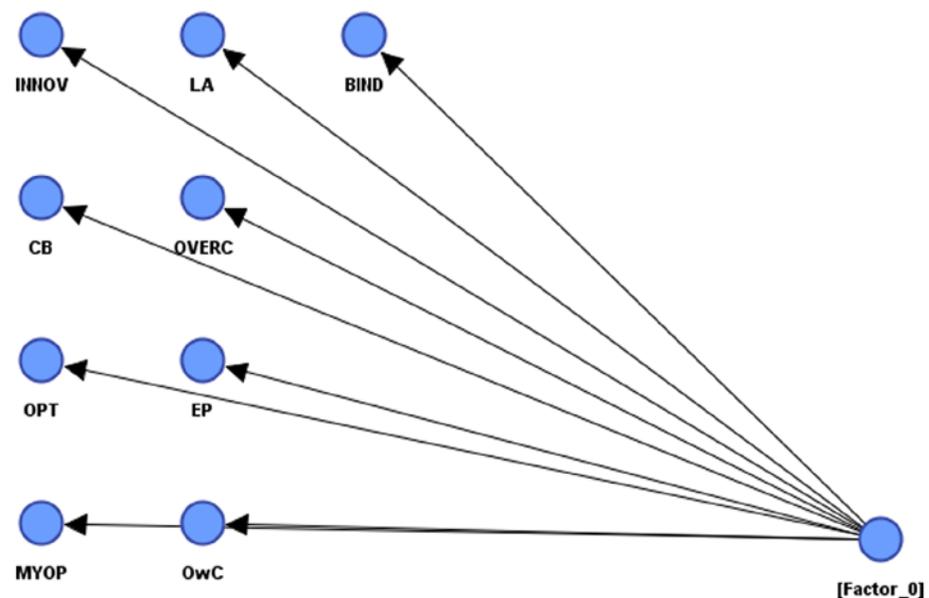
#### 4.1.3. Supervised learning dedicated to the characterization of a particular variable

BayesiaLab proposes a third type of learning Bayesian networks from a database. While the first two (associations discovery and discovery of new concepts) algorithms are called “non-supervised”, the latter category belongs to algorithms (naive Architecture, Architecture augmented naive, Wives and Children, Cover Markov memi supervised learning...) called “supervised”. In addition to these algorithms, this type of modeling makes use of expert opinion to the final construction of the networks (Figure 3).

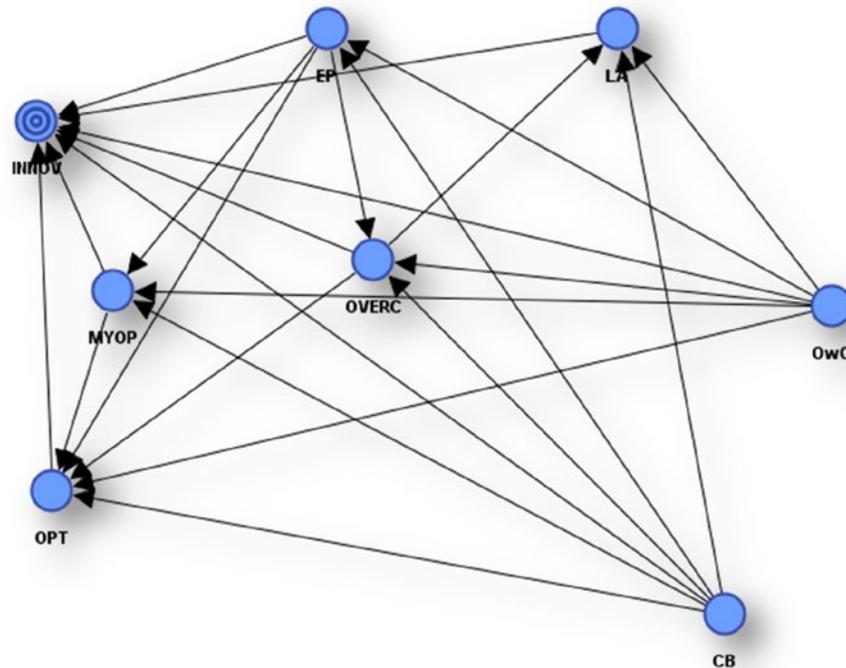
#### 4.2. Analysis of the discovered relationships

The relationships between the variables in the parent node and child node are measured using three indicators: the Kullback–Leibler, the relative weight, and the Pearson correlation. The Kullback–Leibler and the relative weight are two indicators that show the concreteness of relationships and the importance of correlation between variables, whereas the Pearson correlation, which progresses from 0 to 1, indicates the significance of variables relationship. Thus, Table 7 shows the relationship analysis between variables across the Bayesian network.

Figure 2. INNOV: Automatic selection of the number of classes.



**Figure 3. Firm's innovation decision determinants: Bayesian network. Graphical model presentation.**



Concerning the influence of ownership concentration on the innovation decision, analysis advanced in Table 7 shows the presence of direct, moderate (Kullback–Leibler=.0944/relative weight=.5183), negative, and significant ( $\beta=-.0800^*$ ) relationship.

This negative relationship contradicts some evidence in the setting of agency theory (Hosono et al., 2004) that verify a positive and significant relationship between the level of R&D expenses and ownership concentration. These studies note that the large part of capital held by shareholders incites them to monitoring executives' decisions in order to promote long-term performance (Alchian & Demsetz, 1972). Thus, the presence of block holders positively influences managers' strategies in investing on specific assets with high rate of risk and return.

However, our results confirm some other studies (Yafeh & Yosha, 2003), which attest that innovation as a long-term and risky decision is a source of conflict between shareholders and managers based on divergences in loss aversion and horizon attitudes. In fact, innovation may not be required by managers who have short-term preferences, while it is mainly required by shareholders.

Therefore, some psycho-sociological studies (Girandola et al., 2008; Paulhan, 1992; Steptoe, 1991) show that, faced with a high level of pressure, a person does not have, normally, a passive reaction. He might employ an active strategy of “coping” in order to deactivate and alleviate the cognitive destabilization created by the sense of fear and stress.

Moreover, Fernback et al. (2014) suggests that self-deception is caused by the high menace exerted by authority in order to changing individual behavior. When self-deceiving, individuals are obviously manipulating their behavior in a self-serving mode; however, this does not mean that their behavior is completely determined by their self-control.

Furthermore, results in Table 7 show an indirect influence of ownership concentration on the innovation decision via the managerial discretion determinants. Ownership concentration has a moderate (Kullback–Leibler=.0766/relative weight=.4204), negative, and insignificant ( $\beta=-.1681$ )

**Table 7. The relationships analysis**

Parents nodes	Childs nodes	Kullback–Leibler divergence <sup>(a)</sup>	Relative weight <sup>(b)</sup>	Pearson correlation <sup>(c)</sup>
OwC	INNOV	.0944	.5183	-.0800*
LA	INNOV	.1821	1.0000	.0064*
EP	INNOV	.1482	.8139	-.1252
MYOP	INNOV	.1480	.8130	.0201**
OVERC	INNOV	.1476	.8105	.0694*
CB	INNOV	.1086	.5966	.0551**
OPT	INNOV	.1070	.5876	.0237**
OwC	OPT	.0766	.4204	-.1681
OwC	MYOP	.0250	.1376	.0587**
OwC	LA	.0088	.0482	.0656*
OwC	EP	.0022	.0119	.0035***
OwC	OVERC	.0208	.1143	-.1477
CB	OPT	.0460	.2527	-.0978*
CB	MYOP	.0737	.4047	.2796
CB	LA	.0103	.0565	.0320**
CB	EP	.0193	.1059	-.0107***
CB	OVERC	.0050	.0276	-.0119***
OVERC	OPT	.0785	.4309	-.1016***
EP	OPT	.0781	.4286	.1226
EP	MYOP	.0310	.1704	-.0800*
EP	OVERC	.0075	.0413	.0107***
MYOP	OPT	.0518	.2842	-.1361
OVERC	LA	.0107	.0586	.0362**

Notes: (a) Kullback–Leibler close to one: important correlation between the variables.

(b) Relative weight close to one: important correlation between the variables.

(c) Pearson correlation:\*, \*\*, \*\*\*, respectively, at 10, 5, and 1%.

effect on CEO’s optimism. It has a weak (Kullback–Leibler=.0250/relative weight=.1376), positive, and significant ( $\beta$ =.0587\*\*) effect on CEO’s myopia. Also, ownership concentration has a weak (Kullback–Leibler=.0088/relative weight=.0482), positive, and significant ( $\beta$ =.0656\*\*) effect on CEO’s loss aversion. It has a weak (Kullback–Leibler=.0022/relative weight=.0119), positive, and significant ( $\beta$ =.0035\*\*\*) effect of CEO’s expertise power. Finally, ownership concentration has a weak (Kullback–Leibler=.0208/relative weight=.1143), negative, and insignificant ( $\beta$ =-.1477) effect on CEO’s overconfidence.

In terms of the theory of persuasion (Chappé et al., 2007; Girandola et al., 2008), discipline (ownership concentration) only cannot lead to the desired attitude (positive and significant effect on CEO’s myopia, positive and significant effect on CEO’s loss aversion). As a recommendation, the authors demonstrate that discipline should be associated with motivation in order to play a greater role in changing a subject’s attitude by inserting the sight of the “efficacy” of the risky behavior. In the prospect theory, Kahneman and Tversky (1979) and Tversky and Kahneman (1992) present the notion of “framing” which consists to present simultaneously information concerning risk and others motivation consequences (the presence of gain or absence of loss). The “framing” affects the individual risk’s attitude. Referring to Rothman and Salovey (1997), motivation activates the relationship between expected behavior and the attitude toward the task.

Concerning the influence of CEO's attitude on the innovation decision, analysis advanced in Table 7 shows the presence of strong (Kullback–Leibler=.1821/relative weight=1.0000), positive, and significant ( $\beta=.0064^{***}$ ) effect of CEO's loss aversion. It also shows a strong (Kullback–Leibler=.1482/relative weight=.8139), negative, and insignificant ( $\beta=-.1252$ ) effect of CEO's expertise power. Moreover, there is a strong (Kullback–Leibler=.1480/relative weight=.8130), positive, and significant ( $\beta=.0201^{**}$ ) effect of CEO's myopia. Analysis also shows the presence of strong (Kullback–Leibler=.1476/relative weight=.8105), positive, and significant ( $\beta=.0694^*$ ) effect of CEO's overconfidence. Finally, CEO's optimism has a moderate (Kullback–Leibler=.1070/relative weight=.5876), positive, and significant ( $\beta=.0237^{**}$ ) effect on innovation decision.

By referring to evidence advanced by the persuasive communication theory (Girandola et al., 2008), attitude change does not effectively stimulate new behaviors especially in situations where the discussed issues do not require high involvement from the part of subjects. The author proposes to reconsider the idea commonly accepted that the individual's attitude would be perceived as the main motivation of his behavior.

Concerning the influence of the CEO's commitment bias on the innovation decision, analysis advanced in Table 7 shows the presence of direct, strong (Kullback–Leibler=.1086/relative weight=.5966), positive, and significant ( $\beta=.0551^{**}$ ) relationship.

Additionally, there is an indirect influence of the CEO's commitment bias on the innovation decision via the managerial discretion determinants. Commitment bias has a weak (Kullback–Leibler=.0460/relative weight=.2527), negative, and significant ( $\beta=-.0978^*$ ) effect on CEO's optimism. It has a moderate (Kullback–Leibler=.0737/relative weight=.4047), positive, and insignificant ( $\beta=.2796$ ) effect on CEO's myopia. Also, commitment bias has a weak (Kullback–Leibler=.0103/relative weight=.0565), positive, and significant ( $\beta=.0320^{**}$ ) effect on CEO's loss aversion. It has a weak (Kullback–Leibler=.0193/relative weight=.1059), negative, and significant ( $\beta=-.0107^{***}$ ) effect on CEO's expertise power. Finally, commitment bias has a weak (Kullback–Leibler=.0050/relative weight=.0276), negative, and significant ( $\beta=-.0119^{***}$ ) effect on CEO's overconfidence.

This result confirms the theoretical prediction of the theory of commitment (Joule & Beauvois, 1998), which advances that, on the behavioral level, commitment leads to the perseverance of key behavior and the generation of new behaviors going in the same direction (e.g. the foot-in-the-door effect).

#### **4.3. Analysis of the firm's innovation decision (INNOV)**

To analyze the firm's innovation decision, we express, firstly, the innovation decision variable as a target in the Bayesian network. Secondly, we use the function that produces the analysis report of the target firm's innovation decision. According to this report, the correlation between firm's innovation decision and other variables is approximated by binary mutual information and the binary relative importance (Table 8).

The target variable analysis "Firm's innovation decision" shows that 57.5926% of Tunisian companies decided on innovation in the post-revolution period (2010–2011).

Moreover, results show, for each value of the target, the list of nodes that have a probabilistic dependence with the target, sorted by descending order according to their relative contribution to the knowing of the target value.

In the case of innovation, the most important nodes in terms of informational relative contribution are, consecutively, the CEO's moderate expertise power (Binary relative importance=1.000), the ownership concentration (Binary relative importance=.4081), the absence of CEO's overconfidence (Binary relative importance=.3066), the CEO's commitment bias (Binary relative importance=.1904),

**Table 8. Target variable analysis**

Nodes	Binary mutual information <sup>(a)</sup>	Binary relative importance <sup>(b)</sup>		Modal value <sup>(c)</sup> (%)
<i>INNOV=Yes (57.5926%)</i>				
EP	.0115	1.0000	Average	59.7190
OwC	.0047	.4081	Yes	71.5550
OVERC	.0035	.3066	No	71.0115
CB	.0022	.1904	Yes	77.0482
OPT	.0004	.0353	Yes	54.6744
MYOP	.0003	.0255	No	55.8593
LA	.0000	.0026	Yes	59.3620
<i>INNOV=No (42.4074%)</i>				
EP	.0115	1.0000	Average	71.1001
OwC	.0047	.4081	Yes	78.6067
OVERC	.0035	.3066	No	77.2012
CB	.0022	.1904	Yes	72.2184
OPT	.0004	.0353	Yes	52.2868
MYOP	.0003	.0255	No	53.8330
LA	.0000	.0026	Yes	58.7228

Notes: (a) Mutual information is the amount of information given by a variable on the target value. It is calculated in bits.

(b) Relative importance presents the importance of a variable with respect to the target value.

(c) Modal value is the average value of the explanatory variable for each target value.

the CEO's optimism (Binary relative importance=.0353), the long-term attitude (myopia=no) (Binary relative importance=.0255), and, finally, the loss aversion attitude (Binary relative importance=.0026).

However, in the case of no innovation, the most important nodes in terms of informational relative contribution are, consecutively, the CEO's moderate expertise power (Binary relative importance=1.000), the ownership concentration CEO's expertise power (Binary relative importance=.4081), the absence of CEO's overconfidence (Binary relative importance=.3066), the commitment bias (Binary relative importance=.1904), the CEO's optimism (Binary relative importance=.0353), long-term attitude (myopia=no) (Binary relative importance=.0255), and, finally, the CEO's loss aversion (Binary relative importance=.0026).

Additionally, the profile for each value of the target is described by the modal value of each influencing nodes. These profiles are compared with the priori modal values of the nodes i.e. when the target variable is unobserved.

In the case of innovation, the most important modal value is given by the node of the CEO's commitment bias (modal value=77.0482%), the ownership concentration has a great influence on the target profile (modal value=71.5550%), the absence of CEO's overconfidence has a considerable effect on the target profile (modal value=71.0115%), the CEO's moderate expertise power determinates the target profile (modal value=59.7190%), the CEO's loss aversion describes well the target profile (modal value=59.3620%), also, the long-term attitude (myopia=no) describes mainly the target profile (modal value=55.8593%), and, finally, CEO's optimism explains greatly the target profile (modal value=54.6744%).

**Table 9. Target dynamic profile analysis**

Noeud	Modalité optimale	Probabilité (%)	Probabilité jointe (%)
<i>INNOV=YES</i>			
<i>A priori</i>		57.5926	100.0000
EP	Weak	66.0143	34.5455
OPT	Yes	71.6269	15.4999
OwC	No	82.3178	4.5682
CB	No	100.0000	1.3636
<i>INNOV=No</i>			
<i>A priori</i>		42.4074	100.0000
EP	Strong	56.6667	.9091
OwC	No	80.0000	.4545
LA	No	100.0000	.2727

However, in the case of no innovation, the most important modal value is given by the node ownership concentration (modal value=78.6067%), the absence of CEO’s overconfidence has a great influence on the target profile (modal value=77.2012%), the CEO’s commitment bias has a considerable effect on the target profile (modal value=72.2184%), the CEO’s moderate expertise power determinates the target profile (modal value=71.1001%), the CEO’s loss aversion describes well the target profile (modal value=58.7228%), also, the long-term attitude (myopia=no) describes mainly the target profile (modal value=53.8330%), and, finally, the CEO’s optimism explains greatly the target profile (modal value=52.2868%).

**4.4. Maximization of the target average (INNOV)**

The target dynamic profile capability software is a test enhanced by BayesiaLab program to provide the percentage of explanatory variable to maximize the target variable value. Table 9 presents the dynamic profile of the firm’s innovation decision (INNOV).

The target dynamic profile analysis presented in Table 9 shows the following two results:

First, with the 57.5926% augmentation in innovation decision, it is associated with an augmentation of CEO’s optimism (71.6269%). On the other hand, this augmentation is associated with the decrease in CEO’s expertise power, ownership concentration, and commitment bias, respectively, with 66.0143, 82.3178, and 100.0000%.

Secondly, with the 42.4074% decrease in innovation decision, it is associated with an augmentation of the effect of CEO’s strong expertise power (56.6667%). On the other hand, this decrease is associated with the decrease if ownership concentration and CEO’s loss aversion, respectively with 80.0000 and 100.0000%.

**5. Conclusion**

To sum up, our purpose is to study the relationship between the ownership concentration and decisional latitude on investment (investment in R&D), which does not stem from a scarcity of work dealing with this relationship; however, the originality of our study was revealed in both the theoretically and empirically levels.

Theoretically, our research examines the relationship between ownership concentration as an organizational managerial discretion’s determinants and firms’ innovation decision. The originality of this work is that we investigate this relationship in the setting of both psychological theory of persuasion and theory of commitment. For that, we mediate the CEO’s attitude variables (optimism,

myopia, loss aversion, executive power, and overconfidence) in the relationship between ownership concentration and the firms' innovation decision. For this goal, we have implemented a survey conducted around some executives of large private companies in Tunisia in the post-revolution period.

Empirically, the data analysis has confirmed the theoretical prediction, which indicates that persuasive effort exerted by ownership concentration on a CEO's attitude does not affect a CEO's innovation behavior. This trial relationship "persuasion/attitude/behavior" designed by ownership concentration/CEO's attitude (optimism, myopia, loss aversion, executive power, and overconfidence)/innovation decision is the result of an important commitment link existing between manager and innovation tasks.

Furthermore, the empirical analysis of the relationship between ownership concentration, a CEO's attitude, and a CEO's behavior shows that a manager's expertise power negatively influences his firm performance. This analysis confirms the prediction of UET theory which introduces individual and social psychological dimensions, and going beyond the arguments generally used in the context of agency models to justify greater or lesser efficiency of disciplinary systems related to the task controllability "locus of control." The introduction of the concept of "Executive Job Demand" and its behavioral consequences leads to the conclusion that the building of a system that aims to exert too much pressure for managers to maximize shareholders' wealth could, in certain contexts, induce, contrarily, a degradation in these shareholders performance. However, the main factor that influences the CEO's behavior in innovation decisions is the commitment bias that links executives and innovation decision.

Mainly, we can conclude that the main lesson of this study for Tunisian companies is to include the psychological commitment aspect in the persuasive system by introducing the binding communication in order to align both the CEO's and shareholders' interest and managing efficiently the managerial discretionary space.

#### Funding

The authors received no direct funding for this research.

#### Author details

Hamza Fadhila<sup>1</sup>  
E-mail: [fadhila.hamza@yahoo.com](mailto:fadhila.hamza@yahoo.com)  
Azouzi Mohamed Ali<sup>1</sup>  
E-mail: [Mohamed\\_azouzi@yahoo.fr](mailto:Mohamed_azouzi@yahoo.fr)  
Jarbouli Anis<sup>1</sup>  
E-mail: [anisjarbouli@yahoo.fr](mailto:anisjarbouli@yahoo.fr)

<sup>1</sup> Finance and Accounting Methods, Higher Institute of Business Administration (ISAAS), University of Sfax, B.P. 1013, 3018 Sfax, Tunisia.

#### Citation information

Cite this article as: CEO's commitment bias, ownership concentration, and innovation decision: Behavioral management of CEO's discretion, H. Fadhila, A. Mohamed Ali & J. Anis, *Cogent Economics & Finance* (2014), 2: 948123.

#### References

- Abdullah, F., Weiyu, G., & Vivek, M. (2002). The relation of managerial holdings with Tobin's Q and R&D expenditures: Evidence from Japanese firms. *Multinational Business Review*, 10, 66–71.
- Aghion, P., van Reenen, J., & Zingales, L. (2009). *Innovation and institutional ownership*. CEP Discussion Papers 911. London. <http://dx.doi.org/10.3386/w14769>
- Agrawal, A., & Knoeber, C. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *The Journal of Financial and Quantitative Analysis*, 31, 377–397. <http://dx.doi.org/10.2307/2331397>
- Agrawal, A., & Mandelker, G. (1990). Large shareholders and the monitoring of managers: The case of antitakeover charter amendments. *The Journal of Financial and Quantitative Analysis*, 25, 143–167. <http://dx.doi.org/10.2307/2330821>
- Ajzen, I. (1987). Attitudes, traits, and actions: Dispositional prediction of behavior in personality and social psychology. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 20, pp. 1–63). New York, NY: Academic Press.
- Alchian, A. A., & Demsetz, H. (1972). Production, information costs, and economic organisation. *The American Economic Review*, 62, 777–795.
- Alexandre, H., & Paquerot, M. (2000). Efficacité des Structures de Contrôle et Enracinement des Dirigeants [Effectiveness of structures rooting control officers]. *Finance Contrôle Stratégie* [Finance Strategy control], 3, 5–29.
- Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. (2012). A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology*, 103, 718–735. <http://dx.doi.org/10.1037/a0029395>
- Anderson, R. C., Bates, T. W., Bizjak, J. M., & Lemmon, M. L. (2000). Corporate governance and firm diversification. *Financial Management*, 29, 5–22. <http://dx.doi.org/10.2307/3666358>
- Azouzi, M. A., & Jarbouli, A. (2012). CEO emotional bias and dividend policy Bayesian network method. *Business and Economic Horizons*, 7(1), 1–18.
- Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2008). Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology*, 99, 274–284.
- Bakker, A. B., Shimazu, A., Demerouti, E., Shimada, K., & Kawakami, N. (2011). Crossover of work engagement

- among Japanese couples: Perspective taking by both partners. *Journal of Occupational Health Psychology*, 16, 112–125. <http://dx.doi.org/10.1037/a0021297>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman.
- Bethel, J. E., & Liebeskind, J. (1993). The effects of ownership structure on corporate restructuring. *Strategic Management Journal*, 14, 15–31. [http://dx.doi.org/10.1002/\(ISSN\)1097-0266](http://dx.doi.org/10.1002/(ISSN)1097-0266)
- Carpenter, M. A., Geletkanycz, M. A., & Sanders, Wm. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, 30, 749–778.
- Chappé, J., Verhiac, J.-F., & Meyer, T. (2007). Optimisme et pessimisme comparatifs consécutifs à l'exposition à plusieurs messages menaçants [Optimism and consecutive comparative pessimism exposure several threatening messages]. *Revue Européenne de Psychologie Appliquée* [European Journal of Applied Psychology], 57, 23–35. Retrieved from <http://dx.doi.org/10.1016/j.erap.2006.07.001>
- Charreaux, G. (1996). Pour une véritable théorie de la latitude managériale et du gouvernement des entreprises [For a true theory of latitude managerial and corporate governance]. *Revue Française de Gestion* [Review French Management], 111, 50–64.
- Charreaux, G. (1997). Vers une théorie du gouvernement des entreprises [Toward a theory of government companies]. In G. Charreaux (Ed.), *Le Gouvernement des entreprises—Corporate Governance, théories et faits Economica* [The government of business-corporate governance, theories and facts Economica], (Chap. 15, pp. 421–469).
- Charreaux, G. (2008). *À la recherche du lien perdu entre caractéristiques des dirigeants et performance de la firme: gouvernance et latitude managériale* [In search of the lost link between characteristics of leadership and firm performance: Governance and managerial latitude]. Workbook FARGO No. 1080502.
- Chen, D., & Zheng, Y. (2012). *CEO tenure and risk-taking*. Retrieved from [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2038064](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2038064)
- Cho, M.-H. (1998). Ownership structure, investment, and the corporate value: An empirical analysis. *Journal of Financial Economics*, 47, 103–121. [http://dx.doi.org/10.1016/S0304-405X\(97\)00039-1](http://dx.doi.org/10.1016/S0304-405X(97)00039-1)
- Chouaibi, J., & Affes, H. (2010). *La Structure De Propriété Et L'innovation: Étude Empirique Dans Le Contexte Tunisien*. Manuscrit auteur, publié dans Crises et nouvelles problématiques de la Valeur, Nice, France. Retrieved from <http://hal.archives-ouvertes.fr/docs/00/48/42/56/PDF/p89.pdf>
- Collin, S. O., & Bengtsson, L. (2000, avril). Corporate governance and strategy: A test of the association between structures and diversification on Swedish data. *Corporate Governance*, 8, 154–165. <http://dx.doi.org/10.1111/corg.2000.8.issue-2>
- Courbet, D. (2003). Réception des campagnes de santé publique et efficacité des messages suscitant la peur: une étude expérimentale sur le rôle de la peur dans le changement des attitudes néfastes [Receiving health campaigns public and effectiveness of fear-inducing messages: An experimental study on the role of fear in the change adverse attitudes]. *Revue internationale de Psychologie sociale* [International Journal Social Psychology], 22, 100–118.
- Czarnitzki, D., & Kraft, K. (2003). Management control and innovative activity. *Review of Industrial Organization*, 24(1), 1–24.
- Denis, D. J., Denis, D. K., & Sarin, A. (1997). Ownership structure and top executive turnover. *Journal of Financial Economics*, 45, 193–221. [http://dx.doi.org/10.1016/S0304-405X\(97\)00016-0](http://dx.doi.org/10.1016/S0304-405X(97)00016-0)
- Deschamps, B.-C., Joule, R.-V., & Gury, C. (2005). La communication engageante au service de la réduction de l'abstentionnisme électoral [The engaging communication for reduction of voter abstention]. *Revue Européenne de Psychologie Appliquée* [European Journal of Applied Psychology], 55, 21–27. Retrieved from <http://dx.doi.org/10.1016/j.erap.2004.05.002>
- Eagly, A. H., & Chaiken, S. (2005). Attitude research in the 21st century: The current state of knowledge. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 743–767). Mahwah, NJ: Lawrence Erlbaum.
- Fernbach, P. M., Hagmayer, Y., & Sloman, S. M. (2014). Effort denial in self-deception. *Organizational Behavior and Human Decision Processes*, 123, 1–8. <http://dx.doi.org/10.1016/j.obhdp.2013.10.013>
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Francis, J., & Smith, A. (1995). Agency costs and innovation: Some empirical evidence. *Journal of Accounting and Economics*, 19, 383–409. [http://dx.doi.org/10.1016/0165-4101\(94\)00389-M](http://dx.doi.org/10.1016/0165-4101(94)00389-M)
- Gagne', M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26, 331–362. [http://dx.doi.org/10.1002/\(ISSN\)1099-1379](http://dx.doi.org/10.1002/(ISSN)1099-1379)
- Gallup. (2010). *Employee engagement*. Retrieved October 28, 2010, from <http://www.gallup.com/consulting/52/employee-engagement.aspx>
- Geletkanycz, M. A. (1997). The salience of “culture's consequences”: The effects of cultural values on top executive commitment to the status quo. *Strategic Management Journal*, 18, 615–634. [http://dx.doi.org/10.1002/\(ISSN\)1097-0266](http://dx.doi.org/10.1002/(ISSN)1097-0266)
- Geletkanycz, M. A., & Black, S. S. (2001). Bound by the past? Experience-based effects on commitment to the strategic status quo. *Journal of Management*, 27, 3–21.
- Gibson, C. B., & Earley, P. C. (2007). Collective cognition in action: Accumulation, interaction, examination, and accommodation in the development of group efficacy beliefs in the workplace. *Academy of Management Review*, 32, 438–458. <http://dx.doi.org/10.5465/AMR.2007.24351397>
- Girandola, F. (2003). *Psychologie de la persuasion et de l'engagement*. PUF.
- Girandola, F. (2005). Action and commitment theory. In V. Alexandre & W. Gasparski (Eds.), *French and other perspectives in praxeology* (Vol. 12, pp. 117–130). New Jersey, NJ: Transaction Publishers.
- Girandola, F., Micheli, F., & Joule, R.-V. (2008, April 10–11). Promouvoir la pratique physique chez les étudiants: communication et communication engageante [Promote physical practice among students: Communication and engaging communication]. In *4ème Journées de la prévention INPES* [The fourth Days Inpes prevention]. Paris, France.
- Girandola, F., & Roussiau, N. (2003). L'engagement comme source de modifications à long terme [Commitment as source of long-term changes]. *Les Cahiers Internationaux de Psychologie Sociale* [Papers International Social Psychology], 57, 83–101.
- Greer, L. L., Caruso, H. M., & Jehn, K. A. (2011). The bigger they are, the harder they fall: Linking team power, team conflict, and performance. *Organizational Behavior and Human Decision Processes*, 116, 116–128. <http://dx.doi.org/10.1016/j.obhdp.2011.03.005>
- Griffin, J. M., Nardari, F., & Stulz, R. M. (2008). Do investors trade more when stocks have performed well? Evidence from 46 countries. *Review of Financial Studies*, 20, 905–951.
- Hambrick, D. C. (2007). The field of management's devotion to theory: Too much of a good thing? *Academy of Management Journal*, 50, 1346–1352. <http://dx.doi.org/10.5465/AMJ.2007.28166119>

- Hambrick, D. C., & Finkelstein, S. (1987). Managerial discretion: A bridge between polar views of organizational outcomes. *Research in Organizational Behavior*, 9, 369–406.
- Hambrick, D. C., & Fukutomi, G. D. S. (1991). The seasons of a CEO's tenure. *Academy of Management Review*, 16, 719–742.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9, 193–206.
- Hamza, F., Azouzi, M. A., & Jarboui, A. (2013). CEO's commitment bias and its firm R&D level Bayesian: Network method: Evidence from Tunisia. *Global Journal of Management and Business Research Finance*, 11, 31–44.
- Hamza, F., & Jarboui, A. (2012). Investor's commitment bias and escalation of firm's investment decision. *Corporate Ownership and Control*, 9, 369–380.
- Hansen, G. S., & Hill, C. W. L. (1991). Are institutional investors myopic? A time-series study of four technology-driven industries. *Strategic Management Journal*, 12, 1–16. [http://dx.doi.org/10.1002/\(ISSN\)1097-0266](http://dx.doi.org/10.1002/(ISSN)1097-0266)
- Heaton, J. (2002). Managerial optimism and corporate finance. *Financial Management*, 31, 33–45. <http://dx.doi.org/10.2307/3666221>
- Hill, C. W., & Snell, S. (1988). External control, corporate strategy, and firm performance in research-intensive industries. *Strategic Management Journal*, 9, 577–590. [http://dx.doi.org/10.1002/\(ISSN\)1097-0266](http://dx.doi.org/10.1002/(ISSN)1097-0266)
- Hoskisson, R. E., Hitt, M. A., & Hill, C. W. (1991). Managerial risk taking in diversified firms: An evolutionary perspective. *Organization Science*, 2, 296–314. <http://dx.doi.org/10.1287/orsc.2.3.296>
- Hosono, K., Tomiyama, M., & Miyagawa, T. (2004). Corporate governance and research and development: Evidence from Japan. *Economics of innovation and new technologies*, 13, 141–164. <http://dx.doi.org/10.1080/10438590410001628125>
- Jarboui, A., & Olivero, B. (2008, March–April). Le couple Risque/Horizon temporel des investissements est-il gouverné par les institutionnels et les actionnaires dominants? [The couple risk/time horizon of the investment being governed by institutional and dominant shareholders?] *Banque et Marchés* [Bank and Markets], 93, 20–34.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305–360. [http://dx.doi.org/10.1016/0304-405X\(76\)90026-X](http://dx.doi.org/10.1016/0304-405X(76)90026-X)
- Joule, R. V., & Beauvois, J. L. (1998). *La soumission librement consentie* [Submission freely granted]. Paris: Presses Universitaires de France.
- Joule, R. V., Girandola, F., & Bernard, F. (2007). How can people be induced to willingly change their behavior? The path from persuasive communication to committing communication. *Social and Personality Psychology Compass*, 1, 493–505. <http://dx.doi.org/10.1111/spco.2007.1.issue-1>
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263–291. <http://dx.doi.org/10.2307/1914185>
- Kennedy, J. A., Anderson, C., & Moore, D. A. (2013). When overconfidence is revealed to others: Testing the status-enhancement theory of overconfidence. *Organizational Behavior and Human Decision Processes*, 122, 266–279. <http://dx.doi.org/10.1016/j.obhdp.2013.08.005>
- Kiesler, C. A. (1971). *The psychology of commitment*. Experiments liking behavior to belief. New York, NY: Academic Press.
- Lacetera, N. (2001). Corporate governance and the governance of innovation: The case of pharmaceutical industry. *Journal of Management and Governance*, 5, 29–59. <http://dx.doi.org/10.1023/A:1017907119114>
- Laverty, K. (1996). Economic “short-termism”: The debate, the unresolved issues, and the implications for management practice and research. *The Academy of Management Review*, 21, 825–860.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.
- Lee, P. G. (2005). A comparison of ownership structures and innovations of US and Japanese firms. *Managerial and Decision Economics*, 26, 39–50.
- Lester, S. W., Meglino, B. M., & Korsgaard, M. A. (2002). The antecedents and consequences of group potency: A longitudinal investigation of newly formed work groups. *Academy of Management Journal*, 45, 352–368.
- Mailat, D., & Oswald, S. (2013). Biases and constraints in communication: Argumentation, persuasion and manipulation. *Journal of Pragmatics*, 59, 137–140. <http://dx.doi.org/10.1016/j.pragma.2013.08.014>
- Manso, G. (2011). Motivating innovation. *The Journal of Finance*, 66, 1823–1860. <http://dx.doi.org/10.1111/jofi.2011.66.issue-5>
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61–89. [http://dx.doi.org/10.1016/1053-4822\(91\)90011-Z](http://dx.doi.org/10.1016/1053-4822(91)90011-Z)
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, 61, 20–52.
- Michelik, F., & Girandola, F. (2007, June). Le paradigme de la communication engageante: quels effets sur l'attitude, l'intention comportementale et sur certaines dimensions de l'attitude? [The paradigm of engaging communication: What effects on attitude, behavioral intention and some dimensions attitude?] In *2ème colloque International "Psychologie Sociale de la Communication"* [2nd International Symposium "Psychology Social Communication"] (pp. 22–23). Dijon, France.
- Millhabet, I., Verlhac, J. F., & Desrichard, O. (2002). Comparaison sociale et perception des risques: l'optimisme comparatif [Social comparison and risk perception: Comparative optimism]. In J. L. Beauvois (Ed.), *Perspectives cognitives et conduites sociales* [Cognitive and social behavioral perspectives] (Vol. 8, pp. 215–245). Neufchâtel: Delachaux et Niestlé.
- Morck, R., & Yeung, B. (2003). Agency problems in large family business groups. *Entrepreneurship Theory and Practice*, 27, 367–382. <http://dx.doi.org/10.1111/etap.2003.27.issue-4>
- Musteen, M., Barker, V. L. I., & Baeten, V. L. (2006). CEO attributes associated with attitude toward change: The direct and moderating effects of CEO tenure. *Journal of Business Research*, 59, 604–612. <http://dx.doi.org/10.1016/j.jbusres.2005.10.008>
- Narayanan, M. P. (1985). Managerial incentives for short-term results. *The Journal of Finance*, 40, 1469–1484. <http://dx.doi.org/10.1111/j.1540-6261.1985.tb02395.x>
- Narayanan, M. P. (1996). *Designing community-based development* (Report No. 18187). Washington, DC: The World Bank.
- O'Connor, R. C., & Cassidy, C. (2007). Predicting hopelessness: The interaction between optimism/pessimism and specific future expectancies. *Cognition & Emotion*, 21, 596–613. <http://dx.doi.org/10.1080/02699930600813422>
- Paulhan, I. (1992). Le concept de coping [The concept of coping]. *L'Année Psychologique* [The Year Psychological], 92, 545–557. Retrieved from <http://dx.doi.org/10.3406/psy.1992.29539>
- Paulhan, I., & Bourgeois, M. (1998). *Stress et coping: les stratégies d'ajustement à l'adversité* [Stress and coping: The adjustment adversity strategies]. Paris: PUF.

- Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing *Journal of Personality and Social Psychology*, 74, 1197–1208.  
<http://dx.doi.org/10.1037/0022-3514.74.5.1197>
- Pearl, J. (1986). Fusion, propagation, and structuring in belief networks. *Artificial Intelligence*, 29, 241–288.  
[http://dx.doi.org/10.1016/0004-3702\(86\)90072-X](http://dx.doi.org/10.1016/0004-3702(86)90072-X)
- Petty, R. E., & Krosnick, J. A. (1995). *Attitude strength: Antecedents and consequences*. Mahwah, NJ: Erlbaum.
- Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effect on job performance. *Academy of Management Journal*, 53, 617–635. <http://dx.doi.org/10.5465/AMJ.2010.51468988>
- Rothman, A. J., & Salovey, P. (1997). Shaping perceptions to motivate healthy behavior: The role of message framing. *Psychological Bulletin*, 121, 3–19.  
<http://dx.doi.org/10.1037/0033-2909.121.1.3>
- Ryan, R. M., & Deci, E. L. (2000). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry*, 11, 319–338.  
[http://dx.doi.org/10.1207/S15327965PLI1104\\_03](http://dx.doi.org/10.1207/S15327965PLI1104_03)
- Sangster, A. (1993). Capital investment appraisal techniques: A survey of current usage. *Journal of Business Finance and Accounting*, 20, 307–332.  
<http://dx.doi.org/10.1111/jbfa.1993.20.issue-3>
- Schaufeli, W. B., & Bakker, A. B. (2003). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25, 293–315.
- Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2010). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, 30, 893–917.
- Schaufeli, W. B., Salanova, M., González-romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two simple confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71–92.  
<http://dx.doi.org/10.1023/A:1015630930326>
- Scheier, M., & Carver, C. (1989). Dispositional optimism and physical well-being. The influence of generalized outcome expectancies on health. *Journal of Personality*, 33, 169–210.
- Scheier, M., & Carver, C. (1991). Origins and function of positive and negative affect: A control-process view. *Psychological Review*, 97, 19–35.
- Scheier, M., & Carver, C. (2002). Control processes and self-organization as complementary principles underlying behavior. *Personality and Social Psychology Review*, 6, 304–315.
- Shabou, R. (2000). *Nature des détenteurs de blocs de contrôle, mécanismes contrôle et performance financière des entreprises tunisiennes* [Nature of holders of control blocks, control mechanisms and financial performance of Tunisian companies]. Working Paper. University of Sfax.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52, 737–783.  
<http://dx.doi.org/10.1111/j.1540-6261.1997.tb04820.x>
- Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94, 461–488. <http://dx.doi.org/10.1086/jpe.1986.94.issue-3>
- Steptoe, A. (1991). Psychological coping, individual differences and physiological stress responses. In C. L. Cooper & R. Payne (Eds.), *Personality and stress, individual differences in the stress process* (Chap. 9, pp. 205–233). New York, NY: Wiley.
- Tasa, K., Taggar, S., & Seijts, G. H. (2007). The development of collective efficacy in teams: A multi-level and longitudinal perspective. *Journal of Applied Psychology*, 92, 17–27.  
<http://dx.doi.org/10.1037/0021-9010.92.1.17>
- Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, 101, 354–365.  
<http://dx.doi.org/10.1037/a0023779>
- Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5, 297–323.  
<http://dx.doi.org/10.1007/BF00122574>
- Wahal, S., & Mcconnell, J. J. (2000). Do institutional investors exacerbate managerial myopia? *Journal of Corporate Finance*, 6, 307–329.  
[http://dx.doi.org/10.1016/S0929-1199\(00\)00005-5](http://dx.doi.org/10.1016/S0929-1199(00)00005-5)
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39, 906–920.
- Wirtz, P. (2011). The cognitive dimension of corporate governance in fast growing entrepreneurial firms. *European Management Journal*, 29, 431–447.  
<http://dx.doi.org/10.1016/j.emj.2011.06.004>
- Witte, K. (1998). Fear as motivator, fear as inhibitor: Using the extended parallel process model to explain fear appeal successes and failures. In P. A. Andersen & L. K. Guerrero (Eds.), *Handbook of communication and emotion: Research, theory, applications, and contexts* (pp. 423–450). San Diego, CA: Academic Press.
- Yafeh, Y., & Yosha, O. (2003). Large shareholders and banks: Who monitors and how? *The Economic Journal*, 113, 128–146. <http://dx.doi.org/10.1111/econj.2003.113.issue-484>



© 2014 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 3.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

